

WHAT IS CLAIMED IS:

1                   1.       1. A feed system for an aerosolizer, the feed system comprising:  
2                   a feed system housing having an ampoule region that is adapted to receive an  
3 ampoule that contains a liquid and that includes a bottom end and a top end, and a liquid  
4 receiving region that is adapted to receive liquid dispensed from the ampoule, wherein the  
5 liquid receiving region includes an overflow region that extends along side the ampoule  
6 region above the bottom end of the ampoule; and  
7                   an interface that is adapted to couple the liquid receiving region to an aerosol  
8 generator, whereby liquid from the liquid receiving region is permitted to flow to the aerosol  
9 generator for aerosolization.

1                   2.       A feed system as in claim 1, wherein the liquid receiving region  
2 includes a tapered bottom end with a drain opening to funnel liquid from the ampoule to the  
3 aerosol generator.

1                   3.       A feed system as in claim 2, wherein the interface is adapted to  
2 produce a seal between the bottom end of the liquid receiving region and the aerosol  
3 generator.

1                   4.       A feed system as in claim 2, wherein the feed system housing includes  
2 a top portion and a bottom portion having the tapered bottom end, wherein the top portion is  
3 attachable to the bottom portion, and wherein the ampoule region and the overflow region  
4 comprise two elongate channels extending through the top portion.

1                   5.       A feed system as in claim 4, further comprising an o-ring seal  
2 positioned between the top portion and the bottom portion.

1                   6.       A feed system as in claim 1, further comprising a lid coupled to the  
2 feed system housing that is adapted to secure the ampoule within the ampoule region.

1                   7.       A feed system as in claim 6, wherein the lid includes a slot that is  
2 adapted to receive a top tab that extends from the top end of the ampoule.

1                   8.       A feed system for an aerosolizer, the feed system comprising:

2 an ampoule containing a liquid, wherein the ampoule has a top end and a  
3 bottom end;  
4 a housing having an ampoule region into which the ampoule is held, and a  
5 liquid receiving region that is adapted to receive liquid dispensed from the ampoule;  
6 an interface that is adapted to couple the liquid receiving region to an aerosol  
7 generator, whereby liquid from the liquid receiving region is permitted to flow to the aerosol  
8 generator for aerosolization.

1 9. A feed system as in claim 8, wherein the liquid receiving region  
2 includes an overflow region that extends along side the ampoule region above the bottom end  
3 of the ampoule.

1 10. A feed system as in claim 8, wherein the liquid receiving region  
2 includes a tapered bottom end with a drain opening to funnel liquid from the ampoule to the  
3 aerosol generator.

1 11. A feed system as in claim 10, wherein the interface is adapted to  
2 produce a seal between the bottom end of the liquid receiving region and the aerosol  
3 generator.

1 12. A feed system as in claim 10, wherein the feed system housing  
2 includes a top portion and a bottom portion having the tapered bottom end, wherein the top  
3 portion is attachable to the bottom portion, and wherein the ampoule region and the overflow  
4 region comprise two elongate channels extending through the top portion.

1 13. A feed system as in claim 12, further comprising an o-ring seal  
2 positioned between the top portion and the bottom portion.

1 14. A feed system as in claim 8, further comprising a lid coupled to the  
2 housing to secure the ampoule within the ampoule region.

1 15. A feed system as in claim 14, wherein the ampoule includes a top tab  
2 extending from the top end, and wherein the lid includes a slot through which the top tab  
3 extends.

1 16. A feed system as in claim 15, wherein the top tab is removable to form  
2 a vent opening in the top end of the ampoule.

1           17.     A feed system as in claim 8, wherein the ampoule includes a bottom  
2 tab extending from the bottom end, and wherein the bottom tab is removable to form a drain  
3 opening in the bottom end of the ampoule.

1           18.     A feed system as in claim 12, wherein the ampoule includes a bottom  
2 tab extending from the bottom end, and wherein the bottom tab extends distally beyond the  
3 top portion of the housing, and wherein the bottom tab is removable prior to connection of  
4 top portion with bottom portion to form a drain opening in the ampoule.

1           19.     An aerosolization device, comprising:  
2 a device housing having an interior and an exit opening;  
3 an aerosol generator disposed within the device housing to eject an aerosolized  
4 liquid through the exit opening;  
5 a liquid feed system disposed within the device housing, the liquid feed  
6 system comprising a feed system housing having an ampoule region that is adapted to receive  
7 an ampoule that contains a liquid, a liquid receiving region that is adapted to receive liquid  
8 dispensed from the ampoule, and an interface that couples the liquid receiving region to the  
9 aerosol generator, whereby liquid from the liquid receiving region is permitted to flow to the  
10 aerosol generator for aerosolization.

1           20.     A device as in claim 19, wherein the liquid receiving region includes  
2 an overflow region that extends along side the ampoule region above the bottom end of the  
3 ampoule.

1           21.     A device as in claim 19, wherein the liquid receiving region includes a  
2 tapered bottom end with a drain opening to funnel liquid from the ampoule to the aerosol  
3 generator.

1           22.     A device as in claim 21, wherein the interface includes a seal member  
2 to produce a seal between the bottom end of the liquid receiving region and the aerosol  
3 generator.

1           23.     A device as in claim 19, wherein the aerosol generator includes a seal  
2 member to produce a seal between the aerosol generator and the interface. ☒

1           24.     A device as in claim 21, wherein the feed system housing includes a  
2 top portion and a bottom portion having the tapered bottom end, wherein the top portion is  
3 attachable to the bottom portion to permit the top portion to be removed from the device  
4 housing, and wherein the ampoule region and the overflow region comprise two elongate  
5 channels extending through the top portion.

1           25.     A device as in claim 24, further comprising an o-ring seal positioned  
2 between the top portion and the bottom portion.

1           26.     A device as in claim 19, further comprising a lid coupled to the feed  
2 system housing that is adapted to secure the ampoule within the ampoule region.

1           27.     A device as in claim 26, wherein the lid includes a slot that is adapted  
2 to receive a top tab that extends from the top end of the ampoule.

1           28.     A device as in claim 19, wherein the aerosol generator comprises a  
2 vibratable member having a plurality of apertures and a vibratable element to vibrate the  
3 vibratable member.

1           29.     An aerosolization system in kit form, comprising:  
2 an aerosolization device comprising a device housing having an exit opening,  
3 an aerosol generator held within the housing to provide an aerosolized liquid through the exit  
4 opening, and a liquid receiving portion of a liquid feed system; and  
5 a liquid feed system receiver unit having an ampoule containing a liquid to be  
6 aerosolized, wherein the receiver unit is insertable into the aerosolization device to couple  
7 with the liquid receiving portion.

1           30.     A kit as in claim 29, wherein the receiver unit includes an ampoule  
2 region having the ampoule and a liquid overflow region adjacent to the ampoule region for  
3 receiving overflow liquid from the liquid receiving portion.

1           31.     A kit as in claim 29, wherein the ampoule has a top end and a bottom  
2 end, a top tab extending from the top end that is removable to form a vent opening, and a  
3 bottom tab extending from the bottom end that is removable to form a drain opening.

1                    32.     A kit as in claim 31, wherein the receiver unit has a bottom end with an  
2     opening that is sized to permit the bottom tab to extend through the bottom end of the  
3     receiver unit.

1                    33.     A kit as in claim 31, wherein the receiver unit has a top end with an  
2     opening that is sized to permit the top tab to extend through the top end of the receiver unit.

1                    34.     A kit as in claim 29, further comprising an o-ring seal positioned  
2     between the receiver unit and the liquid receiving portion.

1                    35.     A kit as in claim 29, wherein the liquid receiving portion has a tapered  
2     bottom end that is operably coupled to the aerosol generator.

1                    36.     A kit as in claim 29, wherein the aerosol generator comprises a  
2     vibratable member having a plurality of apertures and a vibratable element to vibrate the  
3     vibratable member.

1                    37.     A method for aerosolizing a liquid, the method comprising:  
2     inserting an ampoule containing a liquid into an aerosolization device having a  
3     liquid feed system, an aerosol generator, and an exit opening;  
4     opening the ampoule to permit liquid from the ampoule to drain into a liquid  
5     receiving region of the feed system; and  
6     operating the aerosol generator to eject liquid droplets through the exit  
7     opening.

1                    38.     A method as in claim 37, further comprising removing a bottom tab  
2     from the ampoule to form drain opening before inserting the ampoule into the aerosolization  
3     device.

1                    39.     A method as in claim 37, wherein the ampoule is held within a receiver  
2     unit of the liquid feed system, and further comprising inserting the receiver unit into the  
3     aerosolization device and coupling the receiver unit with the liquid receiving region.

1                    40.     A method as in claim 39, further comprising removing the receiver unit  
2     from the aerosolization device following operation of the aerosol generator and discarding the  
3     receiver unit.

1 41. A method as in claim 40, further comprising cleaning the aerosol  
2 generator following removal of the receiver unit.

1 42. A method as in claim 37, further comprising removing a top tab from  
2 the ampoule to form a vent opening after inserting the ampoule into the aerosolization device.

1 43. A method as in claim 37, wherein the feed system includes an  
2 overflow region adjacent to the ampoule and further comprising permitting excess liquid to  
3 flow into the overflow region.

1 44. A method as in claim 37, further comprising vibrating an aperture plate  
2 of the aerosol generator to produce the liquid droplets.

1 45. A method for aerosolizing a liquid, the method comprising:  
2 inserting a receiver unit of a liquid feed system unit into an aerosolization  
3 device having an aerosol generator, wherein the receiver unit includes an ampoule containing  
4 a liquid, and wherein the receiver unit is inserted until coupled to a liquid receiving region of  
5 the feed system that is interfaced with the aerosol generator;  
6 opening the ampoule to permit liquid from the ampoule to drain into the liquid  
7 receiving region; and  
8 operating the aerosol generator to eject liquid droplets from the aerosolization  
9 device.

1 46. A method as in claim 45, further comprising removing a bottom tab  
2 from the ampoule to form drain opening before inserting the receiver unit into the  
3 aerosolization device.

1 47. A method as in claim 45, further comprising removing a top tab from  
2 the ampoule to form a vent opening after inserting the receiver unit into the aerosolization  
3 device.

1 48. A method as in claim 45, wherein the receiver unit includes an  
2 overflow region adjacent to the ampoule and further comprising permitting excess liquid to  
3 flow into the overflow region.

- 1 49. A method as in claim 45, further comprising vibrating an aperture plate  
2 of the aerosol generator to produce the liquid droplets.

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